



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/037,674	03/09/1998	HIDEKI MIZUHARA	2933SE-11-CI	7419

22442 7590 05/05/2005

SHERIDAN ROSS PC
1560 BROADWAY
SUITE 1200
DENVER, CO 80202

EXAMINER

NADAV, ORI

ART UNIT

PAPER NUMBER

2811

DATE MAILED: 05/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary**Application No.**

09/037,674

Applicant(s)

MIZUHARA ET AL.

Examiner

ori nadav

Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 March 2005.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16-27 is/are pending in the application.
4a) Of the above claim(s) 16-24 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 25-27 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ 1.4. A. P. S. H. A. M. G. S.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Date + Time (PTO-152)

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 25-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claimed limitations of a passivation layer including a first insulating film that is a single modified SOG, wherein the first insulating film contains boron impurity to decompose organic components of an organic SOG film and wherein the modified SOG film has hygroscopicity lower than the organic SOG film, as recited in claim 25, are unclear as to the structural relationship between the first insulating film, the single modified SOG, the organic SOG film and the modified SOG film. It is unclear whether the single modified SOG is the modified SOG film, whether the first insulating film which is the single modified SOG has hygroscopicity lower than the organic SOG film, whether the boron impurity decompose organic components of an exemplary organic SOG film or a specific organic SOG film, and what is the exact location of the organic SOG film in the claimed structure.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 25-27, insofar as in compliance with 35 U.S.C. 112, are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakano (JP 6-291202) in view of Okumura et al.

Nakano teaches in figure 1b and related text a semiconductor device comprising a semiconductor substrate 11, an insulating film 12 on the substrate, wirings 13 located on the insulating film 12 and a passivation layer covering top surfaces of the insulating film and the wirings, including a first insulating film 15 that is a single modified SOG wherein the first insulating film contains boron impurity to decompose organic components of an organic SOG film, and wherein the modified SOG film has hygroscopicity lower than the organic SOG film, and a second insulating film 16 comprising oxide having a hygroscopicity lower than the first insulating film and being located on at least one of an upper side and lower side of the first insulating film. Although Nakano does not explicitly state that silicon oxide has a hygroscopicity lower than boron doped SOG, this feature is inherent in Nakano's device, because it is well known in the art that silicon oxide has a hygroscopicity lower than boron doped SOG, of which judicial notice is taken.

Art Unit: 2811

Although Nakano does not explicitly state that layers 15 and 16, respectively, are passivation layers, layers 15 and 16 meet the functional limitations of the claims since layers 15 and 16 protect the device.

Nakano does not state that insulating film 12 is an interlayer insulating film. Okumura et al. teach in figure 13D an interlayer insulating film (ILD) 12 located between the semiconductor substrate 1 and wirings 16. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use an interlayer insulating film as the insulating film in Nakano's device in order to provide good isolation between the wiring layers and the active regions in the semiconductor substrate.

Regarding the claimed limitations of "a first insulating film contains boron impurity to decompose organic components of an organic SOG film", these would not carry patentable weight in this claim drawn to a structure, because distinct structure is not necessarily produced by forming a modified SOG film from an organic SOG film. Note that a "product by process" claim is directed to the product per se, no matter how actually made, In re Hirao, 190 USPQ 15 at 17 (footnote 3). See also In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Fessmann, 180 USPQ 324; In re Avery, 186 USPQ 161; In re Wertheim, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); and In re Marosi et al., 218 USPQ 289, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in

"product by process" claims or not. Note that the applicant has the burden of proof in such cases, as the above case law makes clear.

Response to Arguments

3. Applicant argues that Nakano does not teach that the modified SOG film has hygroscopicity lower than the organic SOG film.

Although Nakano does not explicitly state that silicon oxide has a hygroscopicity lower than boron doped SOG, this feature is inherent in Nakano's device, because it is well known in the art that silicon oxide has a hygroscopicity lower than boron doped SOG, of which judicial notice is taken.

4. Applicant argues that prior art does not teach the claimed limitations of "a first insulating film contains boron impurity to decompose organic components of an organic SOG film".

The claimed limitations of "a first insulating film contains boron impurity to decompose organic components of an organic SOG film", do carry patentable weight in this claim drawn to a structure, because distinct structure is not necessarily produced by forming a modified SOG film from an organic SOG film.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Papers related to this application may be submitted to Technology center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the TC 2800 Fax center located in Crystal Plaza 4, room 4-C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Group 2811 Fax Center number is (703) 308-7722

Application/Control Number: 09/037,674
Art Unit: 2811

Page 7

and 308-7724. The Group 2811 Fax Center is to be used only for papers related to Group 2811 applications.

Any inquiry concerning this communication or any earlier communication from the Examiner should be directed to *Examiner Nadav* whose telephone number is **(571) 272-1660**. The Examiner is in the Office generally between the hours of 7 AM to 4 PM (Eastern Standard Time) Monday through Friday. Any inquiry of a general nature or relating to the status of this application should be directed to the **Technology Center Receptionists** whose telephone number is **308-0956**



O.N.
May 2, 2005

ORI NADAV
PRIMARY EXAMINER
TECHNOLOGY CENTER 2800